Review on AMES-Cloud Using Preservation, Fetching and Decisive Video Streaming Over Cloud Computing

Miss. Payal Krishnarao Hedau

Department of CSE

Priyadarshini Bhagawati College of Engineering,

Nagpur, India

Email: payalhedau@gmail.com

Prof. Manoj S. Chaudhari

Department of CSE

Priyadarshini Bhagwati College of Engineering,

Nagpur, India

Email: manojchaudhary2@gmail.com

Abstract- The video traffic demands are increasing over a mobile network through wireless link cannot corporate with the demand of video traffics. The increasing traffic demand is accounted by video streaming and downloading. Hence, there is a gap between link capacity and traffic demands along with the time varying condition which is result in the poor quality of video streaming service over a mobile network such as sending long buffering time and intermittent disruptions due to limited bandwidth and link condition. By leveraging cloud computing technology, we propose a new mobile video streaming framework which has two main parts : Efficient social video sharing and Adaptive mobile video streaming which built a private agent which provides video streaming service for each mobile user in the network efficiently. To demonstrate its performance we implement a prototype of AMES-Cloud framework. Thus, it is crucial to improve the video quality service of streaming while using the computing resource and networking efficiently and also provides preservation over cloud computing.

Keywords: Adaptive video streaming, Scalable video coding (SVC), Efficient video sharing, Mobile networks, Cloud computing, Traffic demand.

_____*****_____

I.   INTRODUCTION

Cloud computing is the delivery of services rather than product whereby shared resources, information and software are provided are provided to the computers and other devices as a utility over a network. There are three type of classification in cloud they are public, private and hybrid. Cloud is a sharing resources which archives coherence and economies of scale over a network. Cloud computing is the concept of iterative process of infrastructure and shared services. It cooperates with the availability of low-cost computers, high-speed networks, storage devices and the widespread adoption of hardware virtualization and service oriented architecture. Because of the increasing of more traffic demands over a network having the difficulty in streaming and downloading while the video streaming is not so challenging in the wired networks[2]. It has been suffering from video traffic transmissions over a wireless link of scares bandwidth. It takes effort to enhance the wireless link bandwidth and rising video traffic demands from users are rapidly causing the wireless link capacity. It is shown that users the streaming is not popular in wired networks and suffering from transmission of video traffic over a scare bandwidth, there have been many studies to improve the better service quality of streaming based on two aspects.

A] Adaptive Video Streaming Techniques:

In adaptive video streaming techniques the video traffic rate is adjusted so that the user can experiences the best quality of video based on the time-varying link capacity bandwidth [1]. The adaptive streaming service can switch among the different bit rate segments encoded with the configurable bit rate and resolution at the server where clients dynamically request the videos based on the monitoring of link quality. The rate adaptation control techniques, the streaming service over network is control by TCP rate control methods [6] [7]. It provides the function of packet loss rate, packet size and round trip time. Adaptivity is controlled by the server or the receiver. In adaptive video streaming technique the scalable video coding is deployed in the real time SVC encoding and decoding at server [9].

B] Mobile Cloud Computing Technique:

It provides the streaming service in the wired internet specially because of its capability and scalability[13]. The cloud computing based services requires more factors to consider in mobile environments they are user mobility, wireless link dynamics and limited capability of mobile devices [3] [8]. The new designs of cloud computing indicates that the virtualized private agents are satisfying the requirements of quality of service of individual users. It proposes to designed a cloud framework prototype using private agents in the cloud to provides adaptive streaming services efficiently.

II.   METHODOLOGY

In the methodology of cloud framework the adaptive video streaming and sharing framework are called as AMES-Cloud. The video cloud having a large scale of video base which stores the popular videos from video service provider (video VPs). The temp VB catch the new candidates for the most popular videos and also counts the access frequency of each video clips. The collector try to find the videos which are already popular in video separator and re-encode the collected videos in the scalable video coding (SVC) format and store it to temp VB. The all management is done by the central controller (CC). This is the two tier architecture:

18

data center and data deliver. In case, if video traffic demand is increases then VC creates the sub VC dynamically. The sub VC is also having the sub VB fetching the recently video segments. The delivering of video from VC and sub VC are not same but it is only a link operation within the data center. The sub VC is also having the encoding function. If the user demanding for video which is not available in sub VB and VB then video cloud will be fetch and encoding the video and the transfer to each user. Each user will report about its link condition to their sub VC. Each user device has temporary catching called as local VB and it is also used to buffering and Prefetching. The video cloud provides efficient video streaming, efficient video sharing and preservation.

(i) Efficient streaming Videos: In cloud computing it is necessary to increase the streaming of video data and provides click and play functionality by increasing prefetching. It is used Social Network Services (SNSs) based prefetching for increasing the video streaming.

(ii) Efficient sharing Videos: It adjust the streaming flow with scalable video coding technique.

(iii) Security Over Cloud: It defines a security issues for storing, sharing and streaming the videos that not any one can access videos over a cloud. It should be used the bit level security using AES algorithm.
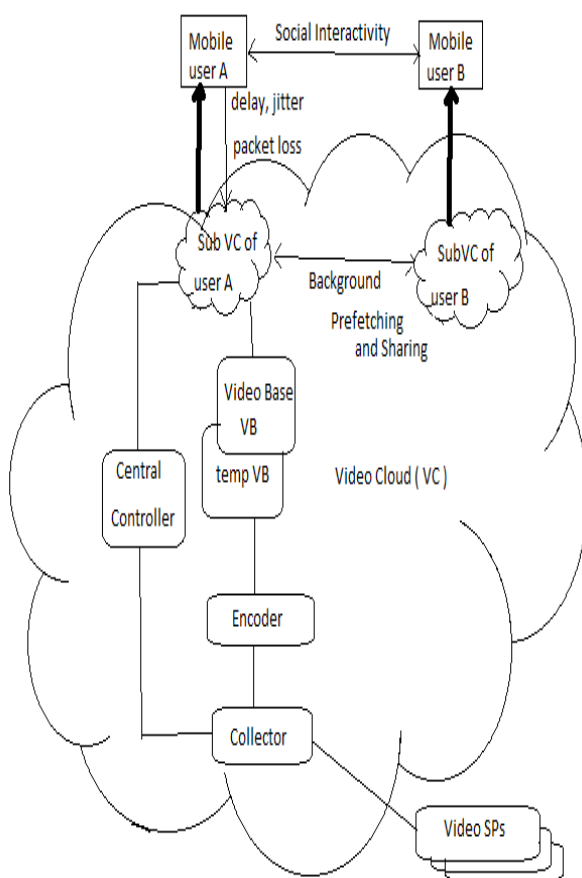

Fig 1: Outline of Cloud Framework

III. EXISTING SYSTEM

In existing system, when we type a url in our browser, it loads that page and lets you navigate to that particular page. If that page having the embedded video in the url it starts streaming based on your mobile network (GPRS/Wi-Fi) and also based on the strength of signal and keeps streaming as well as downloading. In other case, if there is HD resolution then it will take time to streaming and playing. In this situation, it takes time delay to watch the video which the user has requested for video.

Disadvantages :
1)   It does not controls the resolution.
2)   It increases the unnecessary traffic for bandwidth in the network.
3)   The video streaming does not maintain the constancy.
4)   Always uses the maximum link capacity for streaming.
5)   If user gets paused on the screen in weak signal on the screen till video streams.

IV. ANALYSIS

Cloud computing is a techniques which is used to develop, maintain and stores the data related to that techniques and also maintaining the data in the cloud. The quality of service on video streaming is based on two factors: Scalability and Adaptability.

A. Scalability

In cloud compauting video streaming services should support a number of wide range of devices; they have different computing powers, different video resolutions, different wireless links etc. The present link capacity of a devices are depending on its signal strength and vary over a time, the users traffic in the same cell and also the link condition variation. It Stores the number of versions of video with different bit rate of same video content in cloud may produces difficulty in terms of communication and storage. In this case, the Scalable Video Coding (SVC) technique of the H.264 AVC video compression standard [10] [11] [12] defines base layer (BL) with multiple enhance layers (ELs) are used to address this issue. There are three scalability features exploited to encoding these sub stream they are: (a) Image resolution layering by using spatial scalability, (b) Frame rate layering by using temporal scalability, (c) Image compression layering by using quality scalability. By using the scalable video coding technique service the videos can be decoded or played at the lowest quality if only the base layer (BL) is delivered. While delivering the multiple enhance layers, the better quality of video streaming can be achieved.

B. Adaptability

The technique of traditional video streaming is designed by relatively stable traffic link capacity between server and users which results in poor streaming in the environment [4]. The fluctuating wireless link capacity is properly deal with the tolerable video streaming service. To resolve this

problem we adjust the bit rate of adapting video to currently time varying available bandwidth link of each user. The adaptive video streaming service propose to effectively reduced the bandwidth loss and packet loss. By combining the scalable video coding technique and adaptive video streaming technique jointly accomplish the best quality of streaming service of video. Depending on the current link of status it dynamically adjust the number of scalable video coding (SVC) layers [5] [10].

The cloud computing techniques causes to provide scalable resource service provider and offloading process to users. The cloud data center can easily supplies large scale real time video services [10] [20]. The cloud computing techniques have proposed to be generated a personalized intelligent private agent for each user for example, cloudlet [21] and stratus [22]. In cloud, this is because the multiple private agent threads can be maintain efficiently and dynamically based on the time varying of user demands.

Social network service (SNS) is one of the most popular service in cloud computing which proposes to improve quality of content delivery [23] [24]. In this service user may comment, share, repost videos between the friend and member of same group in which user may watch the videos that his/her friend have recommended. Social network service activities (SNSs) are motivated the relationship with the user in order to prefetch beginning part of the video in advance or even to whole video to the member of the group who has not seen the video yet. This should be done by using background job supported by private agent in the cloud. When the user clicks on video to watch, it starts playing instantly.

V. CONCLUSION

In cloud computing the scalable video coding technique and adaptive video streaming techniques can be combined to form the effectively best quality of video streaming services. The aim of proposed system is that it will reduced the traffics and provides the maximum utilization of the bandwidth capacity. As per the methodology it proposes the algorithmic approach for the conversion of video format to other depending upon the strength of signal received from the system. It also proposes the preservation over cloud computing. In that the server will automatically detect the signal and subsequently convert the video in the most optimal streams.

REFERENCE

[1] Y. Li, Y. Zhang, and R. Yuan, "Measurement and Analysis of a Large Scale Commercial Mobile Internet TV System," in *ACM IMC*, pp. 209–224, 2011.

[2] CISCO, "Cisco Visual Networking Index : Global Mobile Data Traffic Forecast Update , 2011-2016," Tech. Rep., 2012.

[3] H. T. Dinh, C. Lee, D. Niyato, and P. Wang, "A Survey of Mobile Cloud Computing : Architecture , Applications , and Approaches," in *Wiley Journal of Wireless Communications and Mobile Computing*, Oct. 2011.

[4] Y. Li, Y. Zhang, and R. Yuan, "Measurement and Analysis of a Large Scale Commercial Mobile Internet TV System," in *ACM IMC*, pp. 209–224, 2011.

[5] P. McDonagh, C. Vallati, A. Pande, and P. Mohapatra, "Quality-Oriented Scalable Video Delivery Using H. 264 SVC on An LTE Network," in *WPMC*, 2011.

[6] Y. Fu, R. Hu, G. Tian, and Z. Wang, "TCP-Friendly Rate Control for Streaming Service Over 3G network," in *WiCOM*, 2006.

[7] K. Tappayuthpijarn, G. Liebl, T. Stockhammer, and E. Steinbach, "Adaptive Video Streaming over A Mobile Network with TCP-Friendly Rate Control," in *IWCMC*, 2009.

[8] S. Chetan, G. Kumar, K. Dinesh, K. Mathew, and M. A. Abhimanyu, "Cloud Computing for Mobile World," Tech. Rep., 2010.

[9] M. Wien, R. Cazoulat, A. Graffunder, A. Hutter, and P. Amon, "Real-Time System for Adaptive Video Streaming Based on SVC," in *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 17, no. 9, pp. 1227–1237, Sep. 2007.

[10] M. Wien, R. Cazoulat, A. Graffunder, A. Hutter, and P. Amon, "Real-Time System for Adaptive Video Streaming Based on SVC," in *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 17, no. 9, pp. 1227–1237, Sep. 2007.

[11] H. Schwarz, D. Marpe, and T. Wiegand, "Overview of the Scalable Video Coding Extension of the H.264/AVC Standard," in *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 17, no. 9, pp. 1103–1120, Sep. 2007.

[12] H. Schwarz and M. Wien, "The Scalable Video Coding Extension of The H. 264/AVC Standard," in *IEEE Signal Processing Magazine*, vol. 25, no. 2, pp.135–141, 2008.

[13] Q. Zhang, L. Cheng, and R. Boutaba, "Cloud Computing: State-of-the-art and Research Challenges," in *Journal of Internet Services and Applications*, vol. 1, no. 1, pp. 7–18, Apr. 2010.

[14] D. Niu, H. Xu, B. Li, and S. Zhao, "Quality-Assured Cloud Bandwidth Auto-Scaling for Video-on-Demand Applications," in *IEEE INFOCOM*, 2012.

[15] Y.G. Wen, W.W. Zhang, K. Guan, D. Kilper, and H. Y. Luo, "Energy-Optimal Execution Policy for A Cloud-Assisted Mobile Application Platform," Tech. Rep., September 2011.

[16] W.W. Zhang, Y.G. and D.P. Wu, "Energy-Efficient Scheduling Policy for Collaborative Execution in Mobile Cloud Computing," in *INFOCOM, Mini Conf.*, 2013.

[17] W.W. Zhang, Y.G. Wen, Z.Z. Chen and A. Khisti, "QoE-Driven Cache Management for HTTP Adaptive Bit Rate Streaming over Wireless Networks," in *IEEE Transactions on Multimedia*, November 2012.

[18] J. Li, M. Qiu, Z. Ming, G. Quan, X. Qin, and Z. Gu, "Online Optimization for Scheduling Preemptable tasks on IaaS Cloud systems," in *Journal of Parallel and Distributed Computing (JPDC)*, vol.72, no.5, pp.666-677, 2012.

[19]   P. Calyam, M. Sridharan, Y. Xu , K. Zhu , A. Berryman, R. Patali, and A. Venkataraman, "Enabling Performance Intelligence for Application Adaptation in the Future Internet," in *Journal of Communication and Networks*, vol. 13, no. 6, pp. 591–601, 2011.

[20]   Z. Huang, C. Mei, L. E. Li, and T. Woo, "CloudStream : Delivering High-Quality Streaming Videos through A Cloud-based SVC Proxy," in *IEEE INFOCOM*, 2011.

[21]   N. Davies, "The Case for VM-Based Cloudlets in Mobile Computing," in *IEEE Pervasive Computing*, vol. 8, no. 4, pp. 14–23, 2009.

[22]   B. Aggarwal, N. Spring, and A. Schulman, "Stratus : Energy-Efficient Mobile Communication using Cloud Support," in *ACM SIGCOMM DEMO*, 2010.

[23]   Y. Zhang, W. Gao, G. Cao, T. L. Porta, B. Krishnamachari, and A. Iyengar, "Social-Aware Data Diffusion in Delay Tolerant MANET," *Handbook of Optimization in Complex Networks: Communication and Social Networks*, 2010.

[24]   Z. Wang, L. Sun, C. Wu, and S. Yang, "Guiding Internet-Scale VIdeo Service Deployment Using Microblog-Based Prediction," in *IEEE INFOCOM*, 2012.